Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

BULLETIN
OF THE
TORREY BOTANICAL CLUB.

Vol. XIV.] New York, August, 1887. [No. 8.

The Genera Echinocystis, Megarrhiza and Echinopepon.

BY SERENO WATSON.

The first and for a long time the only known North American species of the American tribe of *Cucurbitaceæ* which is called by Bentham & Hooker the *Elaterieæ*, and by Cogniaux the *Cyclanthereæ* (both names proposed by Naudin and equally appropriate, but the latter the earlier), was the *Echinocystis lobata*, Torr. & Gray. This was first described by Herrmann in 1698 from plants raised in Holland from seeds which Tournefort had received from Canada. It was next noticed by Muhlenberg in his Index Floræ Lancastriensis (1793).* By Muhlenberg, as afterwards by Seringe in DeCandolle's Prodromus, it was referred to *Momordica*, and by Michaux to *Sicyos*. Its distinctness as a genus was first shown in Torr. & Gray's Flora, where the name *Echinocystis* was given to it, their previous *Hexameria* of the same year (1840) being preoccupied.

An allied plant of Oregon which had been collected by Douglas and Scouler, and referred by Hooker to the eastern *Sicyos angulatus*, was distinguished from that species by Torrey & Gray as *S. Oreganus*, the specimens being too imperfect to show its nearer affinity to *Echinocystis*. In the years 1854 and

---

* It is not probable, as Cogniaux thinks, that the *Elaterium trifoliatum*, Linn., based upon Clayton's description of Virginian specimens, can be referred to this species. The description agrees better with *Sicyos angulatus*, notwithstanding the "valvulis vi elastica per maturitatem dehiscentibus." The *Echinocystis* is not known to occur in Virginia.

1855 the same plant and similar Californian species were collected by the botanists of the Pacific Railroad surveys, and specimens were submitted to Dr. Torrey for determination. Some of these species were also known to Dr. Kellogg, of San Francisco, and in March, 1855, he described one of them under the name *Marah muricatus*, noting at the same time its near relationship to *Echinocystis lobata*. In June, however, of the same year he appears to have silently discarded or to have forgotten his new genus, for he then describes another species of the "giant root" as *Echinocystis muricatus*. These publications were made in the columns of a daily newspaper. Dr. Torrey, in ignorance of this and as a result of his study of the Government collections made under Lieutenants Whipple, Parke and Williamson, referred the plants to a new genus which he called *Megarrhiza*, publishing a species (*M. Californica*) in Parke's report in 1856 and authorizing the enumeration of that species and of *M. Oregana* in Newberry's report upon Williamson's plants. The descriptions of the genus and species he delayed, intending to give them in full in connection with his report upon the collections made by Lieut. Whipple. The publication of this report, however, was not made until 1857, and in the meantime he learned through Dr. Andrews of Kellogg's genus *Marah*. Consequently, and more especially on account of the difficulty of determining, from the scarcity of the materials, whether there was really more than one species, he omitted from the report all reference to the matter, and nothing more was published by him on the subject. Nevertheless, the genus *Megarrhiza* was recognized by Dr. Gray in 1859, in his list of Xantus' Lower California plants, and in 1860, in the Botany of Ives' Report. In 1860, Naudin, of Paris, who chanced to have *Megarrhiza Californica* in cultivation, knowing nothing of its previous history, published it as *Echinocystis fabacea*. His acquaintance with the eastern *E. lobata* appears to have been slight, but seeds of that species were communicated to him by Dr. Gray, together with a knowledge of Torrey's genus *Megarrhiza*, and in 1862 he gave a description of it based upon cultivated specimens. He still was of the opinion that the two species were congeneric, "malgré la grande autorité de MM. Torrey et Gray."

In 1866 Naudin proposed the genus *Echinopepon* for several Mexican species, including one of New Mexico (*E. horridus*), which Dr. Gray had previously named *Elaterium ? Coulteri*). Bentham & Hooker, in their Genera Plantarum (1867), refer *Megarrhiza* to *Echinocystis* as a subgenus, and include also Naudin's *Echinopepon*, which they knew only from his description.

Dr. Torrey had in 1861 prepared a report upon the Pacific Coast plants of the Wilkes Expedition, among which were specimens of *Megarrhiza*, but when in 1873, after his death, the report was taken in hand by Dr. Gray for publication, it was found that Dr. Torrey "had left the article on this genus unwritten, and apparently had not determined either upon the number of species or upon the distinctness of his proposed genus." Dr. Gray, therefore, as the easiest way of meeting the difficulty, adopted the conclusion of Naudin and Bentham & Hooker, and included under Naudin's one species (*E. fabacea*) all the known western forms.

This was the condition of things when it became necessary for me to revise the species for the "Botany of California." A study of all the considerable material and notes that were available left me in no doubt regarding the generic distinctness of the western species, and I had no hesitation in adopting Dr. Torrey's name for the genus, defining five species from the Pacific Coast.

In 1877 the peculiar method of germination in *Megarrhiza* was described by Dr. Gray in the Journal of Science. In the same year Cogniaux, of Brussells, discussed the group in his "Diagnoses de Cucurbitacées Nouvelles," though uninformed respecting the recent work upon it. He followed Bentham & Hooker in including the whole in one genus, which he divided into two sections—*Euechinocystis* of two species (one eastern and one western), and *Echinopepon*, as defined by Naudin, to which he added other Mexican and South American species. It was only with much hesitation ("nous avons hesité longtemps"), however, that he assented to the reduction of the last genus. In his later revision of the order (1881) he has found reason for modifying his conclusions so far as to divide the genus into three sections—*Euechinocystis* for the one eastern species, *Marah* for the five species of *Megarrhiza* of the Botany of California, and *Echinopepon* to include sixteen southern species.

The decision to which American botanists should come respecting the rank to be given to these three well-marked groups of species is not a matter of authority, nor of personal feeling or sentiment, but one simply of good judgment based upon sufficient knowledge. As to my own opinion, after eleven years during which the subject has been several times under consideration, I still think that the separation of the genus *Megarrhiza* is the most satisfactory course to take. I also think that Naudin's genus *Echinopepon* should be re-established. The three genera appear to me to be sufficiently well distinguished by the following characters:—

ECHINOCYSTIS. Annual; germination epigæous, as usually in the order; flowers hexamerous; fruit ovoid, bursting irregularly at the apex, two-celled and the cells two-seeded; seeds flat and thin, rugose, oblong with an attenuate base.—One species, of the northern Atlantic States and Canada.

MEGARRHIZA. Perennial, with a tuberous root; germination hypogæous in a peculiar way (so far as known); flowers normally pentamerous; fruit ovoid or globose, bursting irregularly at the apex, two-celled or four-locellate, the cells one-four-seeded; seeds turgid, rounded at both ends, smooth.—The five species of the Botany of California, with *M. macrocarpa*, Rattan, and *M. Gilensis*, Greene; the last species in Arizona.

ECHINOPEPON. Annual; germination epigæous; flowers normally pentamerous; fruit oblong, attenuate at both ends, dehiscing at the apex by a deciduous operculum, two-celled, the cells four to six seeded; seeds small, flattened, rugose.—*E. horridus*, Naud., and *E. Wrightii*, of New Mexico, Arizona and northern Mexico, with several other species of still more southern habitat.

There still remain three peculiar and doubtful southern species, which have been referred to *Echinocystis*, and which may as well remain there provisionally until more is known respecting them, viz.: *E.* (*?*) *Bigelovii*, Cogn. (*Elaterium ? Bigelovii*, Watson), *E. minima*, Cogn. (*Elaterium ? minimum*, Watson, first described by Kellogg, in 1859, as *Marah minima*), and *E.* (*?*) ***parviflora***, Watson. Of the three genera these species should be placed in *Echinopepon*, but it is probable that they will prove referable to some other genus.